



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,266	03/17/2004	Teddy M. Keller	96202-US1	4785
26384	7590	09/12/2007	EXAMINER	
NAVAL RESEARCH LABORATORY ASSOCIATE COUNSEL (PATENTS) CODE 1008.2 4555 OVERLOOK AVENUE, S.W. WASHINGTON, DC 20375-5320			TRUONG, DUC	
		ART UNIT	PAPER NUMBER	
		1711		
		MAIL DATE		DELIVERY MODE
		09/12/2007		PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



UNITED STATES PATENT AND TRADEMARK OFFICE

---

Commissioner for Patents  
United States Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/808,266  
Filing Date: March 17, 2004  
Appellant(s): KELLER ET AL.

**MAILED**  
**SEP 12 2007**  
**GROUP 170**

**SECRETARY OF THE NAVY, UNITED STATES GOVERNMENT**  
**For Appellant**

**EXAMINER'S ANSWER**

This is in response to the corrected appeal brief filed June 26, 2006 appealing from the  
Office action mailed 05/13/05.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

The present application and US Patent Application No. 10/808,264 are both divisional Applications of the same parent application, US Patent 6,756,470. Both applications are under appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

Hammann et al., "Synthesis of Seven New polyphenyl ethers", J. Chem. and Eng. Data, 15(2), 352(1970), cited in Keller reference.

Williams et al., "Solvent-Assisted Ullmann Ether Synthesis. Reaction of dihydric phenols", J. Org. Chem., 32, 2501 (1967), cited in Keller reference.

Declaration under 37 CFR & 1.132 of Teddy M. Keller.

US 4,259,471 Keller et al., March 31, 1981 ;

US 5,352,760, Keller, October 04, 1994 and

US 5,464,926, Keller, November 07, 1995.

#### **(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 14-21 and 38-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keller et al (4,259,471).

The reference discloses a thermoset (see col. 1, lines 51-52) formed by curing (see col. 4, line 43) a mixture comprising one or more bisorthodinitriles of the formula (see Abstract) wherein x is from 1 to 10 and the phenyl groups are attached at the meta or para position, and if x=n+1 then said formula is read on formula of the instant claim

Note that the use of the term "one or more bisorthodinitriles" clearly indicates that more than one bisorthodinitriles can be used.

The reference further discloses a process of preparing said thermoset using curing agents comprising metals such as copper, iron, zinc, nickel and others including cuprous bromide, stannous chloride hydrate---(see col. 3, lines 30-52), as in the instant claims 44-46).

The disclosure of the reference differs from the instant claims in that it neither discloses the claimed general formula nor specific reactants in claims 20 or 42.

However, the claimed general formula is included in the broad teaching in the formula of the reference (see stated above) and the reference does disclose the use of one or more bisorthodinitriles can be used in the process, which are read on the compounds in claims 20 or 42.

Therefore, it would have been obvious to one of ordinary skill in the art to select reactants under process conditions form the reference within the limitations of the instant claims since they have been shown to be effective in a similsr system and thus would have been expected to provide adequate results. There is no showing of unexpected results derived form said selection.

Claims 47-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keller (5,352,760 or 5,464,926).

The references disclose a process of preparing aromatic ether containing phthalonitriles by reacting an excess amount of bis dihydroxyaryl compound with a dihaloaromatic compound in the presence of a base (see col. 1, line 65 et seq. of '760;

Art Unit: 1711

col. 2, line 1 of '926) such as potassium carbonate (see col. 3, line 61 of '760; col. 3, line 65 of '926), as in claim 56) and an solvent and then reacted with 3- or 4-nitrophthalonitriles in the presence of a curing agent to form a thermosetting polymer (see Abstract, col. 1, line 65 to col. 2, line 9 of '760; col. 2, lines 1-59 of '926).

Note that the curing agents comprising metals such as copper, iron, nickel, cuprous bromide, stannous chloride hydrate---(see col. 5, lines 43-64, col. 6, line 48 et seq. of '760; col. 5, line 42-end of '926), as in the instant claims 53-55.

The disclosures of the references differ from the instant claims in that they do not disclose the presence of a copper compound in the first step of the claimed process, reacting a dihydroxyaromatic with a dihaloaromatic compound. However, the curing step occurs after reacting the product of the first step with a nitrophthalonitrile. It indicates that the copper does not have any functionality in the first step.

The references do disclose the presence of a curing agent and its functionality in the final step of the process, to cure the product of the previous step with a nitrophthalonitrile, as in the claims. Therefore, it would have been obvious to one of ordinary skill in the art to add the curing agent into the final step of the process, as disclosed in the references, instead of the first step of the process of the instant claims, since they have the same functionality under same steps of the process to form the same products in the absence of a showing of unexpected results derived from said selection.

**(10) Response to Argument**

**In claim 14, Appellant argues that the Keller reference (4,259,471) is not enabling for all disclosed values of x, including 3,5,7 or 9.**

**This is incorrect since the reference does disclose a similar formula with the repeating units x=1 to 10 wherein x=n+1 and claim 14 requires n is greater than or equal to 2. In this particular case, n=2 corresponds to x=3.**

**In claim 16, n=2,4,6 and 8 correspond to x=3,5,7 and 9.**

**The Declarations and Appellant's arguments have been fully considered but they are not persuasive since they are not commensurate in scope with the claims and based on the steps of the process.**

**In claims 20,21,40 and 41, Appellant argues that the reference does not disclose the phthalonitrile with other phthalonitriles. Said arguments are incorrect since the reference does disclose the use of one or more bisorthodinitriles of the general formula (see Abstract).**

**In claims 47 and related claims, Appellant is correct in stating that the references do not disclose the presence of a copper compound as curing agent in the first step, when reacting a dihydroxyaromatic with a dihaloaromatic. However, the curing step occurs after reacting the product of the first step with a nitrophthalonitrile. It indicates that the copper does not have any functionality in the first step.**

**The references do disclose the presence of a curing agent and its functionality in the final step of the process, to cure the product of the first step with a nitrophthalonitrile, as in the claims.**

**Appellant's arguments are also based on the use of the claimed dihaloaromatic in that the references do disclose the dihaloaromatic contains an R group that is an electron withdrawing group. However, the claimed dihaloaromatic is very broad in that no specific components has been claimed and the claims are open to any dihalo-aromatic component, including those in the references.**

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

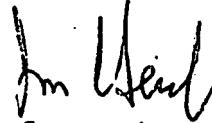
Respectfully submitted,

Duc Truong



Conferees:

James Seidleck,



David Wu.

